PRESSURE FILTER, change-over Series HDD 170 - 450 DN 40 PN 315



Pos. I: left filter-side in operation Pos. II: right filter-side in operation

Connection III and IV to be used to bleed filter or to relieve pressure

1) connection for the potential equalisation, only for the application in the explosive area

EDV 08/12



1. Type index:

| 1.1. HD | Complete filter: (ordering example) D. 170. 10VG. HR. E. P FS. 7 AE | | | | | | | | |
|-------------|---|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
| <u> </u> | series: HDD = pressure filter, change-over | | | | | | | | |
| 2 1 | nominal size: 170, 240, 360, 450 | | | | | | | | |
| 3 1 | filter-material and filter- fineness: | | | | | | | | |
| 4 | 25 VG = 20 μ m _(C) , 16 VG = 15 μ m _(C) , 10 VG = 10 μ m _(C) , 6 VG = 7 μ m _(C) , 3 VG = 5 μ m _(C) Interpor fleece (glass fibre) resistance of pressure difference for filter element | | | | | | | | |
| ; ; ; | $30 = \Delta p \ 30 \text{ bar}$ HR = $\Delta p \ 160 \text{ bar}$ (rupture strength $\Delta p \ 250 \text{ bar}$) | | | | | | | | |
| 5 1 | filter element design: | | | | | | | | |
| - 1 | E = single-end open | | | | | | | | |
| <u>6</u> | sealing material: P = Nitrile (NBR) V = Viton (FPM) filter element specification: | | | | | | | | |
| | - = standard VA = stainless steel | | | | | | | | |
| 8 | connection: | | | | | | | | |
| ۱ | rs = SAE-mange connection 6000 PSI | | | | | | | | |
| 10 | 7 = 1 ½° filter housing specification: - = standard | | | | | | | | |
| 11 i | internal valve: | | | | | | | | |
| | - = without S1 = with by-pass valve Δp 3,5 bar S2 = with by-pass valve Δp 7,0 bar R = reversing valve, Q ≤ 211,008 l/min | | | | | | | | |
| 12 | clogging indicator or clogging sensor: | | | | | | | | |
| | - = without AOR = visual, see sheet-no. 1606 AOC = visual, see sheet-no. 1606 AE = visual-electrical, see sheet-no. 1615 VS1 = electronical, see sheet-no. 1617 VS2 = electronical, see sheet-no. 1618 | | | | | | | | |
| 1.2. 01E | Filter element: (ordering example) E. 170. 10VG. HR. E. P | | | | | | | | |
| <u> </u> | | | | | | | | | |
| <u> </u> | series: 01E. = filter element according to company standard | | | | | | | | |
| 2 1 | nominal size: 170, 240, 360, 450 | | | | | | | | |
| ' | | | | | | | | | |

2. Accessories:

- measure- and bleeder connection, see sheet-no. 1650

3. Dimensions:

| type | connection | А | В | С | weight kg | volume tank |
|---------|------------|-----|-----|-----|-----------|-------------|
| HDD 170 | | 380 | 190 | 350 | 39 | 2x 0,7 l |
| HDD 240 | SAE 1 1/2" | 430 | 240 | 400 | 41 | 2x 0,9 l |
| HDD 360 | | 510 | 320 | 480 | 45 | 2x 1,2 l |
| HDD 450 | | 615 | 425 | 585 | 50 | 2x 1,6 l |

Changes of measures and design are subject to alteration!

Friedensstrasse 41, 68804 Altlussheim, Germany

phone +49 - (0)6205 - 2094-0 fax +49 - (0)6205 - 2094-40 e-mail info url <u>ww</u>

info-internormen@eaton.com www.eaton.com/filtration

4. Spare parts:

| item | qty. | designation | dimension | | | | article-no. | | |
|------|------|---------------------------------------|----------------|---------|---------|--------------------|--------------|--|--|
| | | - | HDD 170 | HDD 240 | HDD 360 | HDD 450 | | | |
| 1 | 2 | filter element | 01E.170 | 01E.240 | 01E.360 | 01E. 450 | | | |
| 2 | 2 | O-ring | 34 x 3,5 | | | 304338 (NBR) | 304730 (FPM) | | |
| 3 | 2 | O-ring | 75 x 3 | | | 302215 (NBR) | 304729 (FPM) | | |
| 4 | 2 | support ring | 81 x 2,6 x 1 | | | | 304581 | | |
| 5 | 2 | O-ring | 18 x 3 | | | 304359 (NBR) | 304399 (FPM) | | |
| 6 | 2 | support ring | 25 x 2,5 x 0,5 | | | 311311 | | | |
| 7 | 2 | O-ring | 56 x 3 | | | 305072 (NBR) | 305322 (FPM) | | |
| 8 | 2 | screw plug | G 1/2 | | | 304678 | | | |
| 9 | 2 | screw plug | G ¼ | | | 305003 | | | |
| 10 | 1 | clogging indicator, visual | AOR or AOC | | | see sheet-no. 1606 | | | |
| 11 | 1 | clogging indicator, visual-electrical | AE | | | see sheet-no. 1615 | | | |
| 12 | 1 | clogging sensor, electronical | VS1 | | | see sheet-no. 1617 | | | |
| 13 | 1 | clogging sensor, electronical | VS2 | | | see sheet-no. 1618 | | | |
| 14 | 1 | O-ring | 15 x 1,5 | | | 315357 (NBR) | 315427 (FPM) | | |
| 15 | 1 | O-ring | 22 x 2 | | | 304708 (NBR) | 304721 (FPM) | | |
| 16 | 1 | O-ring | 14 x 2 | | | 304342 (NBR) | 304722 (FPM) | | |
| 17 | 1 | screw plug | 20913-4 | | | 309817 | | | |
| 18 | 1 | pressure balance valve | | | | | | | |

item 17 execution only without clogging indicator or clogging sensor

5. Description:

Duplex pressure filters with change-over valve type HDD are suitable for a working pressure up to 315 bar.

The pressure peaks are absorbed by a sufficient margin of safety. Duplex filters can be serviced without interruption of operation. The upper part has a three-way-change-over valve which allows to change-over the flow from the dirty filter-side to the clean filter-side without interrupting the operation. The change-over procedure does not lead to a cross sectional contraction. Prior to the change-over procedure a built-in pressure balance valve equalizes the housing pressure. After change-over the pressure balance valve is to be closed again. The closed filter-side has to be air-bled by vent III respectively by vent IV. Then change filter element. After screw in the filter bowl the pressure balance has to be opened shortly and the just serviced filter-side has to be air-bled. Filter elements are available down to a filter fineness of $4 \mu m_{(c)}$.

Internormen Product Line filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirtretaining capacity and a long service life.

Internormen Product Line filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Internormen Product Line filter elements are available with a pressure difference resistance up to Δp 160 bar and a rupture strength up to Δp 250 bar.

The internal valves are integrated into the centering pivot for the filter element. After reaching the opening pressure the by-pass valve causes that an unfiltered partial flow passes the filter. With the reverse valve a protection of the filter element is given when having a reverse flow inside the filter. The reverse flow will not be filtered.

6. Technical data:

temperature range: -10°C to +80°C (for a short time +100°C) operating medium: mineral oil, other media on request max. operating pressure: 315 bar test pressure: 450 bar connection system: SAE-flange connection 6000 PSI EN-GJS-400-18-LT; C-steel housing material: sealing material: Nitrile (NBR) or Viton (FPM), other materials on request installation position: vertical mini-measuring connections: G 1⁄4 air bleeding connections: G ½

Classified under the Pressure Equipment Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3. Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4).

7. Symbols:



8. Pressure drop flow curves:

9. Test methods:

Precise flow rates see 'Interactive Product Specifier' respectively Δp -curves ; depending on filter fineness and viscosity.

Filter elements are tested according to the following ISO standards:

- ISO 2941 Verification of collapse/burst resistance
- ISO 2942 Verification of fabrication integrity
- ISO 2943 Verification of material compatibility with fluids
- ISO 3723 Method for end load test
- ISO 3724 Verification of flow fatigue characteristics
- ISO 3968 Evaluation of pressure drop versus flow characteristics
- ISO 16889 Multi-pass method for evaluating filtration performance